Tetra Tech EM Inc.
11116 South Towne Square, Suite 303 ◆ St. Louis, MO 63123 ◆ (314) 892-6322 ◆ Fax (314) 892-6132

24 Dec 01

Mr. Kevin Turner
On-Scene Coordinator
Emergency Response Branch
U.S. Environmental Protection Agency Region 5
c/o Crab Orchard National Wildlife Refuge
8588 Route 148
Marion, IL 62959

Subject: **Site Assessment Report**
St. Louis Auto Shredding Drum Disposal Site
Madison, St. Clair County, Illinois
Technical Direction Document No. S05-0108-037
Tetra Tech Contract No. 68-W-00-129

Dear Mr. Turner:

The Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START) is submitting the enclosed site assessment report for the St. Louis Auto Shredding Drum Disposal Site in Madison, Illinois.

If you have any questions or comments about the report or need additional copies, please contact Bryan L. Williams at (314) 892-6322, extension 24, or Thomas Kouris at (312) 946-6431.

Sincerely,

Bryan L. Williams for Jennifer Mueller

Jennifer Mueller
START Project Member

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Thomas Kouris, Tetra Tech START Program Manager

SITE ASSESSMENT REPORT
ST. LOUIS AUTO SHREDDING DRUM DISPOSAL SITE
MADISON, ST. CLAIR COUNTY, ILLINOIS

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch
c/o Crab Orchard National Wildlife Refuge
8588 Route 148
Marion, IL 62959

TDD No.:	S05-0108-037
Date Prepared:	24 Dec 01
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
START Project Manager:	Bryan L. Williams
Telephone No.:	(314) 892-6322, ext. 24
U.S. EPA On-Scene Coordinator:	Kevin Turner
Telephone No.:	(618) 997-0115

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1.0 INTRODUCTION

The Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START) was tasked by the U. S. Environmental Protection Agency (U.S. EPA) under Technical Direction Document (TDD) No. S05-0108-037 to perform a site assessment at the St. Louis Auto Shredding Drum Disposal (Drum Disposal) site in Madison, St. Clair County, Illinois. START was assigned to compile available site information, develop a site safety plan, perform a site inspection, collect soil samples, procure an analytical laboratory for the samples, conduct analytical data validation, provide a written log documenting all on-site activities, evaluate potential threats to human health and the environment, and prepare this site assessment report.

The site assessment was performed in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Title 40 of the *Code of Federal Regulations* (40 CFR), Section 300.415, Paragraph (b)(2), to evaluate on-site conditions and possible site-related threats to human health, welfare, and the environment. This report discusses the site background, site assessment activities (including sampling activities), sampling activities, analytical results, and potential site-related threats, and provides a summary of the assessment. Appendix A contains validated analytical results for soil samples collected during the site assessment, and Appendix B provides a list of witnesses present during site assessment activities.

2.0 SITE BACKGROUND

The description and history of the Drum Disposal site are discussed below.

2.1 SITE DESCRIPTION

The Drum Disposal site is located in Madison, St. Clair County, Illinois (see Figure 1). The geographical coordinates of the Drum Disposal site are latitude 38° 39' 20.18" North and longitude 90° 08' 25.99" West. The Drum Disposal site is the former main disposal area for the St. Louis Auto Shredding site, which is currently listed on the Comprehensive Environmental Response, Compensation, and Liability Inventory System (CERCLIS) list. The Drum Disposal site is located nearly 0.75 mile north of the St. Louis Auto Shredding site.

The Drum Disposal site is located in the northwest corner of the crossing of the former Illinois Terminal Electric Railroad grade running north to south and the Cahokia Canal running east to west (see Figure 2). The Gateway National Golf Links golf course surrounds the Drum Disposal site on the east, north, and west, and the Cahokia Canal borders the site to the south. The main disposal area is a clearing in a wooded area containing burn residue, patches of rubbery matter, and stressed vegetation. The clearing measures approximately 100 by 150 feet. START assessed an area encompassing approximately 150 by 200 feet, which extends into the wooded area. The Drum Disposal site slightly slants west-southwest toward a heavily wooded area. The wooded area extends to an area of wetland vegetation near the site. The wetland is located around the outer edge of the golf course and is not observed to flow into any other surface water body.

2.2 SITE HISTORY

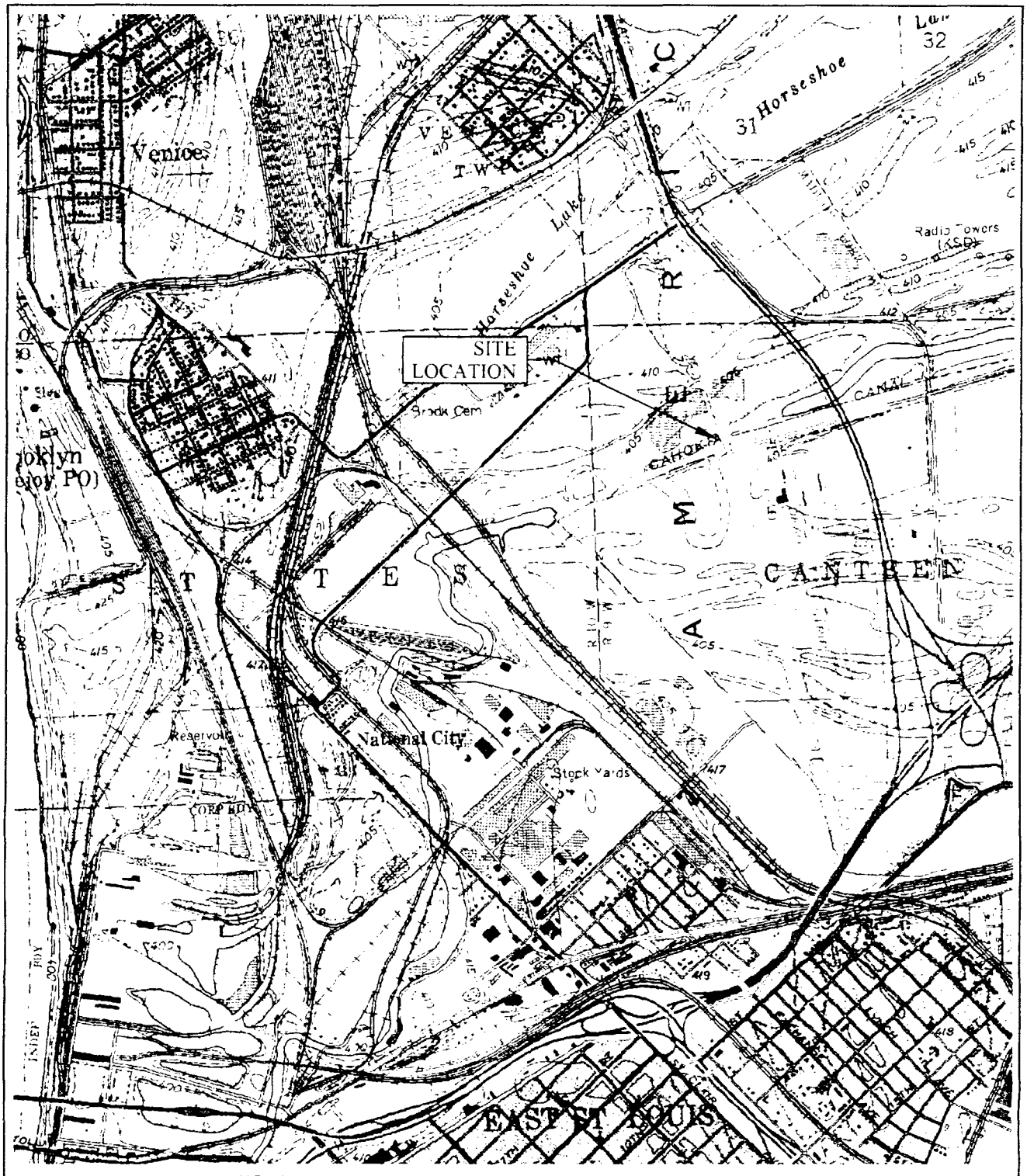
In 1993, a group of hunters walking along the railroad grade east of the site reported numerous overturned and lidless drums at the Drum Disposal site. Later that year, a privately funded site inspection (SI) was conducted at the Drum Disposal site. The SI report documents the presence of more than 25 drums at the Drum Disposal site. Various drums were lidless, turned upside-down, or riddled with bullet holes. The drum contents were categorized as paint pigments, paint sludge, and epoxy material. Analytical results from the SI drum sampling activities revealed that the drum contents contained polychlorinated biphenyls

(PCB), metals, volatile organic compounds (VOC), and semivolatile organic compounds (SVOC). In 1996, these drums were removed from the Drum Disposal site during privately funded removal activities.

In 1998, the Illinois State Geological Survey (ISGS) collected several soil samples from 1 to 9 feet below ground surface (bgs) at the Drum Disposal site. Analytical results showed levels of various metals, including lead, that exceeded the Tiered Approach to Corrective Action Objectives (TACO) Tier 1 soil remediation levels (400 milligrams per kilogram [mg/kg] for lead) and Toxicity Characteristic Leaching Procedure (TCLP) levels (5 milligrams per liter [mg/L] for lead). PCBs were also detected at concentrations exceeding the Toxic Substances Control Act (TSCA) regulatory limit of 50 parts per million (ppm). Also in 1998, the Illinois Department of Transportation (IDOT) assigned Ecology & Environment, Inc. (E & E), to characterize site soil as part of an IDOT project to relocate a roadway. Analytical results from the E & E investigation confirmed previous soil analytical results that revealed PCB, metal, VOC, and SVOC contamination. As a result of E & E's assessment, the Drum Disposal site was referred to the Illinois Environmental Protection Agency's (IEPA) Site Assessment Unit (SAU).

In Spring 2000, the IEPA SAU began a pre-CERCLIS screening action in conjunction with the U.S. EPA at the Drum Disposal site. Previous investigations showed that the contaminated soil at the site could potentially affect nearby wetland areas. The intent of the pre-CERCLIS screening action was to ascertain if potentially contaminated sites should be placed onto CERCLIS. Analytical results from the IEPA pre-CERCLIS screening action activities confirmed that soil at the site contains elevated concentrations of PCBs and metals. IEPA's activities also identified elevated levels of PCBs, zinc, and lead in sediment in the wetland areas near the Drum Disposal site. The IEPA pre-CERCLIS screening action report recommends that the Drum Disposal site be referred to the U.S. EPA for potential removal activities and placement on CERCLIS.

On 14 Sep 01, U.S. EPA On-Scene Coordinator (OSC) Kevin Turner, Tetra Tech START, and Project Resources, Inc. (PRI), conducted a site assessment at the Drum Disposal site. Site assessment activities are discussed in Section 3.0.



SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY, GRANITE CITY, ILLINOIS-MISSOURI QUADRANGLE, 1993.

ST. LOUIS AUTO SHREDDING DRUM DISPOSAL SITE
MADISON, ST. CLAIR COUNTY, ILLINOIS
TDD NO. S05-0108-037

FIGURE 1
SITE LOCATION MAP

Tetra Tech EM Inc.

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3.0 SITE ASSESSMENT ACTIVITIES

START was tasked to perform site assessment activities that included a site reconnaissance and sampling activities. Each activity is discussed below.

3.1 SITE RECONNAISSANCE

At approximately 0900 on 14 Sep 01, START members Jennifer Mueller and Sara Giedeman; U.S. EPA OSC Turner; IEPA representative Mark Wagner; and PRI representative James Sheehan arrived at the parking lot of the Gateway National Golf Links golf course in Madison, Illinois. Golf carts were rented and driven along the railroad grade to the southeast corner of the Drum Disposal site. A cart path was created through the wooded area west of the railroad grade to the site clearing. At 0920, U.S. EPA and START conducted the site reconnaissance, which consisted of observing site conditions and determining locations for x-ray fluorescence (XRF) screening and soil sampling.

At 0930, PRI began XRF screening and START began soil sampling activities (see Section 3.2). The site assessment was completed at 1230 on 14 Sep 01.

3.2 SAMPLING ACTIVITIES

A total of 35 locations in a rough grid pattern were screened with an XRF, and 4 soil samples were collected. XRF screening and soil sampling locations are shown in Figure 2. START sampled soil at potentially sensitive areas specified by U.S. EPA OSC Turner based on locations showing high XRF contaminant concentrations and marked the sampled areas with survey flags. Table 1 summarizes XRF screening results for detected metals. START collected grab surface soil samples SS-1 through SS-4 (see Figure 2) in Level D personal protective equipment using dedicated sampling equipment. The collected samples were placed in sample jars and submitted for laboratory analysis based on the judgment of U.S. EPA OSC Turner and XRF field screening results. Sample descriptions are presented in Table 2. Section 4.0 discusses soil sample analytical results.

TABLE 1

XRF SCREENING RESULTS

Location	Description	Concentration Detected (ppm)										
		Fe	Zn	Pb	Cu	Cr	Hg	Sr	Zr	As	Co	Mo
1	Surface	118,000	117,000	22,400	4,110	ND	514	264	ND	1,500	ND	532
2	Surface	100,000	14,500	63,900	3,180	4,180	ND	228	ND	4,920	ND	260
3	Surface	19,900	2,780	19,000	ND	ND	ND	ND	ND	1,900	ND	ND
4	Surface	48,000	16,200	27,900	ND	ND	ND	212	ND	1,120	ND	105
5	Surface	45,000	8,680	24,600	ND	1,680	ND	175	ND	ND	ND	138
6	Surface	40,200	7,400	20,500	ND	2,750	ND	267	ND	1,200	ND	242
7	Surface	35,000	30,800	16,500	ND	1,750	ND	213	ND	737	ND	146
8	Surface	41,900	17,200	13,300	14,000	4,510	3,080	110	ND	ND	ND	296
9	Surface	144,000	24,200	77,900	6,720	4,140	ND	ND	ND	4,180	ND	211
10	Surface	41,600	9,310	31,700	2,090	ND	ND	78.4	ND	1,890	ND	150
11	Depth = 3 to 4 inches bgs	17,500	4,170	14,300	ND	ND	ND	184	ND	1,040	ND	190
12	Surface	85,500	19,000	35,600	5,080	5,780	650	ND	ND	2,160	ND	163
13	Surface	67,000	16,100	42,700	4,900	6,990	823	ND	ND	2,600	ND	845
14	Surface	78,600	30,200	37,100	ND	2,390	ND	163	ND	1,290	ND	129
15	Surface	260,000	139,000	4,650	ND	6,620	ND	1,050	ND	ND	ND	69.8
16	Surface	19,000	3,720	3,800	916	1,630	231	52.6	ND	ND	ND	ND
17	Surface	332,000	11,200	7,490	6,260	ND	1,450	240	ND	ND	ND	95.9
18	Surface	42,100	13,800	4,750	17,300	3,500	3,890	ND	41.8	ND	2,230	108
19	Surface	59,000	39,900	13,300	ND	2,180	ND	125	ND	755	ND	438
20	Surface	39,200	26,200	13,600	ND	1,790	ND	151	ND	ND	ND	346
21	Depth = 3 to 4 inches bgs	22,100	8,000	25,400	1,250	1,870	ND	114	ND	ND	ND	838
22	Surface	19,200	1,900	1,220	ND	ND	ND	64.9	ND	ND	ND	ND
23	Surface	28,900	6,300	5,580	ND	1,480	ND	175	ND	ND	ND	276
24	Surface	73,300	20,300	13,300	ND	ND	ND	177	ND	1,250	ND	97.2
25	Surface	42,400	7,870	18,700	ND	1,980	ND	257	ND	902	ND	41.3
26	Depth = 3 to 4 inches	25,000	4,760	10,500	ND	1,620	ND	99.9	ND	ND	ND	36.3
27	Surface	39,000	13,900	7,440	ND	1,200	ND	93	ND	ND	ND	28
28	Surface	68,000	81,600	3,260	ND	ND	ND	79	ND	ND	ND	ND
29	Surface	109,000	17,900	9,050	ND	6,440	ND	469	ND	ND	ND	ND
30	Surface	62,700	22,600	29,400	ND	1,920	ND	189	ND	2,200	ND	216

TABLE 1 (Continued)

XRF SCREENING RESULTS

Location	Description	Concentration Detected (ppm)										
		Fe	Zn	Pb	Cu	Cr	Hg	Sr	Zr	As	Co	Mo
31	Surface	324,000	39,000	175,000	4,830	ND	ND	ND	ND	13,600	ND	ND
32	Depth = 3 to 4 inches bgs	67,200	13,100	35,300	ND	2,770	ND	512	ND	2,910	ND	368
33	Depth = 2 inches bgs	34,900	17,400	6,500	ND	4,010	ND	532	ND	ND	ND	117
34	Depth = 3 to 4 inches bgs	24,700	6,780	32,100	1,730	2,730	ND	204	ND	1,680	ND	1,090
35	Surface	8,220	5,410	795	ND	ND	ND	42.3	ND	ND	ND	ND

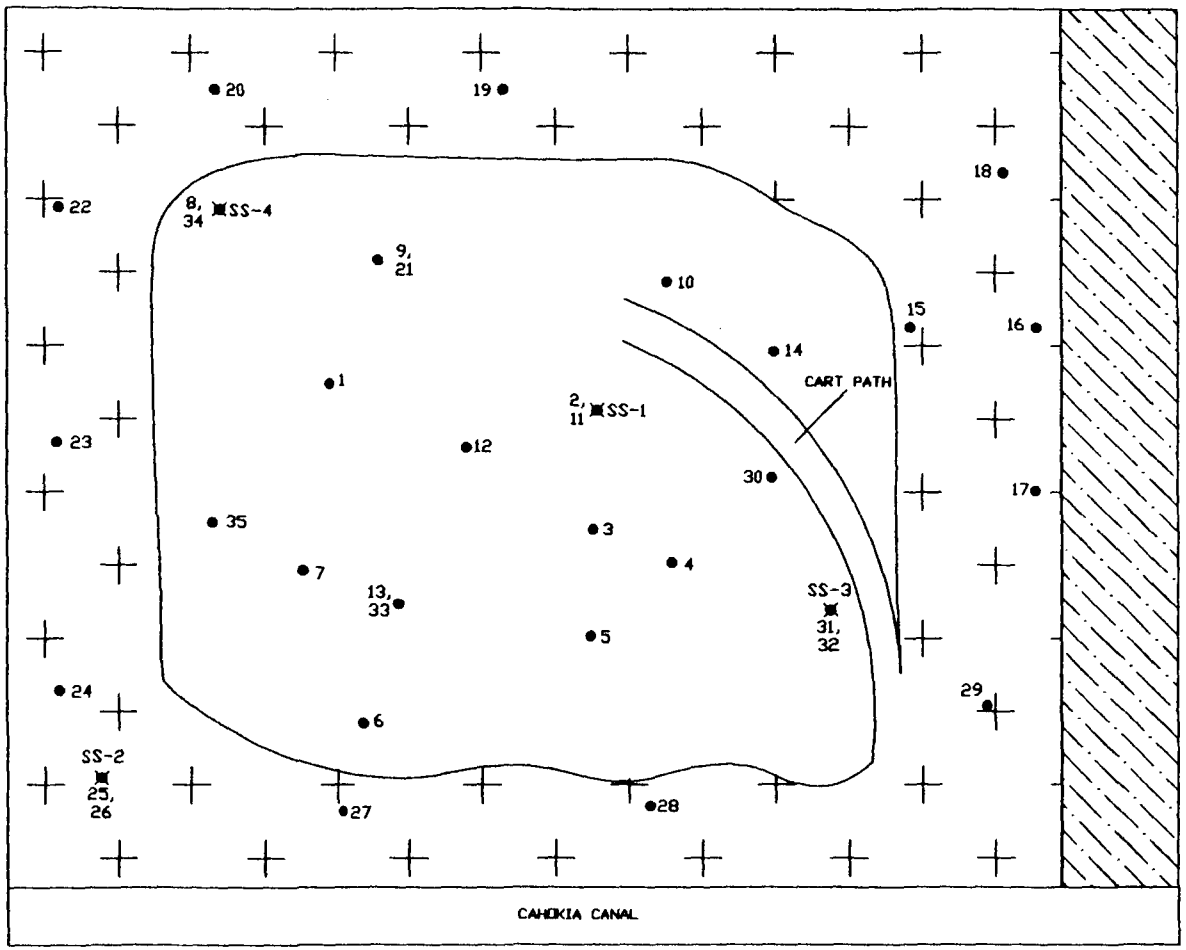
Notes:

As	Arsenic	Mo	Molybdenum
bgs	Below ground surface	ND	Not detected
Co	Cobalt	Pb	Lead
Cr	Chromium	ppm	Part per million
Cu	Copper	Sr	Strontium
Fe	Iron	Zn	Zinc
Hg	Mercury	Zr	Zirconium

TABLE 2

SAMPLE DESCRIPTIONS

Sample No.	Date	Time	Description
SS-1	14 Sep 01	0955	Collected from XRF screening locations 2 and 11
SS-2	14 Sep 01	1105	Collected from XRF screening locations 25 and 26
SS-3	14 Sep 01	1135	Collected from XRF screening locations 31 and 32
SS-4	14 Sep 01	1155	Collected from XRF screening locations 8 and 34



WOODED AREA

RAILROAD GRADE

● XRF SCREENING LOCATION

SOIL SAMPLING LOCATION

NOTE: DIMENSIONS OF AREA SHOWN ARE 150 BY 200 FEET

NOT TO SCALE

N

ST. LOUIS AUTO SHREDDING DRUM DISPOSAL SITE
MADISON, ST. CLAIR COUNTY, ILLINOIS
TDD NO. S05-0108-037

FIGURE 2
SITE FEATURES,
XRF SCREENING LOCATIONS,
AND SOIL SAMPLING LOCATIONS

Tetra Tech EM Inc.

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4.0 ANALYTICAL RESULTS

START submitted all four surface soil samples collected to Pace Analytical Services in Lenexa, Kansas, for analysis under analytical TDD No. S05-0109-003. The samples submitted for analysis and the parameters analyzed for were chosen by U.S. EPA OSC Turner. Analytical results are summarized in Table 3.

All samples were analyzed for total metals (Method 6010), mercury (Method 7471), Toxicity Characteristic Leaching Procedure (TCLP) metals (Method 6010), TCLP mercury (Method 7470), PCBs (Method 8082), and pH (Method 9045).

The pH levels of all samples were within the regulatory limit of 2.0 to 12.5. According to 40 CFR Section 261.22, Paragraph (a)(1), none of the samples are considered to have the hazardous waste characteristic of corrosivity.

For total metals analyses, sample concentrations were compared to residential soil preliminary remediation goals (PRG) set by U.S. EPA Region 9. Results for all samples except Sample No. SS-4 exceeded the regulatory limit for arsenic. All sample concentrations exceeded the regulatory limits for chromium and lead. Samples No. SS-1 and SS-4 exceeded the regulatory limit for barium. No sample results exceeded the regulatory limits for cadmium, selenium, silver, or mercury. For TCLP metals analyses, sample concentrations were compared to toxicity limits set forth in 40 CFR Section 261.24, Paragraph (b), Table 1. For the TCLP metals analyses, all samples exceeded the regulatory limit for lead. No sample concentrations exceeded the TCLP regulatory limits for arsenic, barium, cadmium, chromium, selenium, silver, or mercury. For PCB analyses, sample concentrations were compared to residential soil preliminary remediation goals (PRG) set by U.S. EPA Region 9. All sample concentrations exceeded the regulatory limit for the PCB congener Aroclor-1254. Results for all samples except Sample No. SS-3 exceeded the regulatory limit for the PCB congener Aroclor-1260. No sample concentrations exceeded the regulatory limits for Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, or Aroclor-1248.

TABLE 3

SURFACE SOIL SAMPLE ANALYTICAL RESULTS

Parameter	Regulatory Limit	Sample No.			
		SS-1	SS-2	SS-3	SS-4
Metals (mg/kg)					
Arsenic	0.39	**479**	**12.4**	**894**	**1.7 J**
Barium	5,400	**6,190**	4,910	3,230	**6,220**
Cadmium	37	12.6	17	22.7	5.9
Chromium	30	**535**	**1,390**	**339**	**1,530**
Lead	400	**103,000**	**34,400**	**80,600**	**20,100**
Selenium	390	ND	4.8 J	ND	ND
Silver	390	14.6 J	2.9 J	30.3 J	1.4 J
Mercury	23	2.2	1.1	2.9	1.9
TCLP Metals (mg/L)					
Arsenic	5.0	0.0335 J	ND	ND	ND
Barium	100	0.732	2.22	0.442	3.44
Cadmium	1.0	0.0583	0.0737	0.169	0.0234
Chromium	5.0	ND	ND	ND	0.0067 J
Lead	5.0	**856**	**51.8**	**906**	**15.7**
Selenium	1.0	ND	ND	ND	ND
Silver	5.0	0.0239	0.0039J	0.0274	ND
Mercury	0.2	ND	ND	ND	ND
PCBs (µg/kg)					
Aroclor-1016	3,900	ND	ND	ND	ND
Aroclor-1221	220	ND	ND	ND	ND
Aroclor-1232	220	ND	ND	ND	ND
Aroclor-1242	220	ND	ND	ND	ND
Aroclor-1248	220	ND	ND	ND	ND
Aroclor-1254	220	**34,000**	**39,000**	**7,900**	**120,000**
Aroclor-1260	220	**23,000**	**28,000**	ND	**110,000**
General Chemistry					
pH	>2 or <12.5	7.19	7.9	7.98	7.02

TABLE 3 (Continued)

ANALYTICAL RESULTS

Notes:

µg/kg	Microgram per kilogram	J	Sample concentration above method detection limit but below reportable limit
mg/L	Milligram per liter		
mg/kg	Milligram per kilogram	PCB	Polychlorinated biphenyl
ND	Sample concentration below method detection limit	TCLP	Toxicity characteristic leaching procedure

Shaded cells indicate results above the regulatory limits set forth in (1) 40 CFR Section 261 for TCLP metals and pH and (2) U. S. EPA Region 9 PRGs for metals and PCBs. The residential soil limit was used to be the most conservative.

5.0 POTENTIAL SITE-RELATED THREATS

Paragraph (b)(2) of 40 CFR Section 300.415 lists factors to be considered when determining the appropriateness of a potential removal action at a site. The discussion below summarizes factors applicable to the Drum Disposal site.

- **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants.** The Drum Disposal site is located near a commercial and recreational area of the Gateway National Golf Links golf course and within a wooded area and wetland areas. The site therefore poses the threat of potential exposure to animals and the food chain from PCB and metals contamination at high levels in site soil. Access to the Drum Disposal site is uncontrolled, which poses health concerns through the potential exposure of human populations to PCB and lead contamination at high levels in site soil.

  Harmful effects of lead include low birth weight, premature birth, decreased mental ability in infants, reduced growth in young children, and learning difficulties. Effects of exposure to lead are most severe in developing fetuses in pregnant woman and in young children. Effects of lead exposure in adults include decreased reaction time, inhibition of hemoglobin synthesis (causing anemia), damaged male reproductive system, and increased blood pressure. U.S. EPA considers lead to be a class B2 or probable human carcinogen.

- **Hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate or pose a threat of release.** Elevated levels of PCBs and metals are present in site surface soil according to XRF screening data results and soil sample analytical results. Concentrations of PCBs and metals at elevated levels in surface soil at the site indicate a threat of contaminant migration in melting snow or rain. Airborne contaminant migration is also possible through PCB adsorption to dust particles. Contaminants could also be tracked off site by people and animals that have contacted contaminated areas at the Drum Disposal site. Migration of contaminants from the Drum Disposal site has been determined a potential source of contamination to nearby wetland areas.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.** Elevated levels of PCBs and metals are present in surface soil at the site. Contaminants could migrate off site through heavy rains or winds that would transport PCBs and heavy metals adsorbed to dust particles. As a result of such weather conditions, PCBs and metals could be continuously released to surrounding soil and air. Migration of contaminants from the Drum Disposal site has been determined a potential source of contamination to nearby wetland areas.

6.0 SUMMARY

The Drum Disposal site is located in a commercial and recreational area of the Gateway National Golf Links golf course in Madison, St. Clair County, Illinois. The site is also located in a wooded area near wetland areas. Access to the site is uncontrolled. Analysis of surface soil samples collected during the site assessment indicate high concentrations of several metals and PCBs. Contaminants present in surface soil at the Drum Disposal site could potentially migrate to off-site areas through surface runoff and wind dispersion.

Because analytical results show high levels of lead and PCBs in soil at the site and because of the site's proximity to the golf course and wetland areas, the Drum Disposal site poses a direct threat to human health and the environment. The site therefore meets the criteria for initiating a removal action as outlined in the NCP and 40 CFR Section 300.415, Paragraph (b)(2).

APPENDIX A

VALIDATED ANALYTICAL DATA PACKAGE

(Six Pages)

Tetra Tech EM Inc.
200 E. Randolph Drive, Suite 4700 ◆ Chicago, IL 60601 ◆ (312) 856-8700 ◆ FAX (312) 938-0118

MEMORANDUM

Date: 5 Dec 01

To: Bryan Williams, Project Manager, Tetra Tech EM Inc. (Tetra Tech)
Superfund Technical Assessment and Response Team (START) for Region 5

From: Harry Ellis, Chemist for Tetra Tech START for Region 5

Subject: Data Validation for
St. Louis Auto Shredding Drum Disposal Site
East St. Louis, Illinois
Analytical Technical Direction Document (TDD) No. S05-0109-003
Project TDD No. S05-0108-037

Laboratory: Pace Analytical Services, Inc. (Pace), Lenexa, Kansas
Work Order No. 6052609
Polychlorinated Biphenyl (PCB), pH, Total Metals, and Toxicity Characteristic Leaching Procedure (TCLP) Metals Analyses of Four Soil Samples

1.0 INTRODUCTION

The Tetra Tech START for Region 5 validated PCB, pH, total metals, and TCLP metals analytical data for four soil samples collected during site assessment activities on 14 Sep 01 at the St. Louis Auto Shredding Drum Disposal site in East St. Louis, Illinois. The samples were analyzed under the above-referenced work order by Pace using U.S. Environmental Protection Agency (U.S. EPA) SW-846 Method 8082 for PCB analysis, SW-846 Method 9045 for pH analysis, SW-846 Method 6010 for total metals analysis, SW-846 Method 7471 for mercury analysis, and SW-846 Methods 6010 and 7470 for TCLP metals analysis.

The data were validated in general accordance with U.S. EPA's "Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated Oct 99 and "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" dated Feb 94. Organic data validation

consisted of a review of the following quality control (QC) parameters: holding times, initial and continuing calibrations, blank results, surrogate results, matrix spike and matrix spike duplicate (MS/MSD) results, laboratory control sample (LCS) results, and target compound identification. Inorganic data validation (including indicator parameter data validation) consisted of a review of the following QC parameters: holding times, initial and continuing calibrations, blank results, LCS results, MS/MSD results, inductively coupled plasma (ICP) serial dilutions, ICP interference check sample results, and sample analytical result quantitation. The attachment to this memorandum contains Pace's summary of analytical results, including START's handwritten data qualifications where warranted.

Section 2.0 discusses the results of the organic data validation, Section 3.0 discusses the results of the inorganic data validation, and Section 4.0 presents an overall assessment of the data. The attachment to this memorandum contains Pace's summary of analytical results, including START's handwritten data qualifications where warranted.

2.0 ORGANIC DATA VALIDATION RESULTS

The results of START's organic data validation are summarized below in terms of the QC parameters reviewed.

2.1 HOLDING TIMES

All holding time requirements were met.

2.2 INITIAL AND CONTINUING CALIBRATIONS

All initial calibration results had acceptable relative standard deviations. The continuing calibration percent difference (%D) results were acceptable. Therefore, no qualifications are required for calibration irregularities.

2.3 BLANK RESULTS

During the PCB analyses, method blanks were run with each analytical batch in the proper sequence. No target analytes were detected in the blanks.

2.4 SURROGATE RESULTS

All surrogate recovery results for the PCB analysis were not usable because of the high dilution factors required to bring the results within calibration range.

2.5 MS/MSD RESULTS

MS/MSD samples were analyzed for the PCB analysis and yielded acceptable results.

2.6 LCS RESULTS

An LCS was analyzed with the samples in each analytical batch. The LCS results were within the QC limits specified by the laboratory.

2.7 TARGET COMPOUND IDENTIFICATION

For the PCB analyses, the reported identity of PCB congeners in the sample mixtures was verified by the good match of the sample congener chromatogram patterns to the standard congener chromatogram patterns.

3.0 INORGANIC DATA VALIDATION RESULTS

The results of START's inorganic data validation (including pH data) are summarized below in terms of the QC parameters reviewed. The data qualifiers below were applied to the sample analytical results as appropriate (see the attachment).

- U - The analyte was analyzed for but not detected in the sample. The associated numerical value is the sample detection limit.
- J - The analyte was detected in the sample. The associated numerical value is considered estimated for QC reasons.
- UJ - The analyte was analyzed for but not detected in the sample. The reported sample detection limit is considered estimated for QC reasons.

3.1 HOLDING TIMES

All samples were analyzed for metals within the holding time limits of (1) 28 days for mercury and (2) 6 months for all other metals. All samples for pH analysis were not analyzed within the established or recommended 24-hour holding time limit. This situation often occurs because of sample transportation constraints. The recommended holding time limit was exceeded by a relatively short period and should not dramatically affect pH results because the samples were stored at the proper temperature of 4 ± 2 °C. Therefore, no data qualifications are warranted.

3.2 INITIAL AND CONTINUING CALIBRATIONS

All initial calibration results were satisfactory, with high correlation coefficients or appropriate recoveries as required by the various methods. Continuing calibration recoveries were also all within the QC limits.

3.3 BLANK RESULTS

Appropriate blanks, such as initial calibration, continuing calibration, and preparation blanks, were run with each analytical batch. Low concentrations (less than the reporting limit) of mercury, arsenic, chromium, and selenium were detected in some of the blanks in the TCLP extract analyses and of arsenic, lead, and selenium in the total metals analyses. Similar low concentrations detected in several TCLP extracts and the soil samples were flagged "U" to indicate that they are laboratory artifacts.

3.4 LCS RESULTS

An LCS was analyzed with each analytical batch. All of the LCS results were within the QC limits specified by the laboratory.

3.5 MS/MSD RESULTS

MS/MSD samples were analyzed as required using sample SS1. Arsenic, barium, chromium, and lead recovery results for the total metals MS/MSD samples and lead recovery results for the TCLP extract MS sample were not usable because the samples contained much higher concentrations of the metals than the spikes. No qualifications are warranted for this data gap. For the total metals analyses, the MS had low recoveries for selenium and silver. The acceptable post-digestion spike recoveries confirmed the presence of matrix interference. All results for total selenium and silver in the soil samples are therefore flagged "J" or "UJ" as appropriate to indicate that they are estimates and biased low. Recoveries from the MS and matrix duplicate analyses of the TCLP extract were within QC limits.

3.6 ICP SERIAL DILUTIONS

ICP serial dilution analyses were performed as required. All results were within QC limits.

3.7 ICP INTERFERENCE CHECK SAMPLE RESULTS

ICP interference check sample analyses were performed as required. All results were within QC limits.

3.8 SAMPLE ANALYTICAL RESULT QUANTITATION

Some analytical results were above the sample detection limit but below the sample reporting limit, which corresponds to the low calibration standard. These extrapolations are flagged "J" to indicate that they are considered estimates.

4.0 OVERALL ASSESSMENT OF DATA

Overall, the sample analytical data generated by Pace are acceptable for use as qualified. No data were rejected for nondetected results for compounds unlikely to be associated with the St. Louis Auto Shredding Drum Disposal site, nor were there any serious problems with interference to sample results by major concentrations of constituents.

APPENDIX B

LIST OF WITNESSES

(One Page)

LIST OF WITNESSES

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8238 Marshall Drive
Lenexa, Kansas 66214
Telephone No.: (913) 859-0005

ATTACHMENT A

PACE SUMMARY OF SAMPLE ANALYTICAL RESULTS

(30 sheets)

Pace Sample No.:	604579003	Date Collected:	09/14/01 09:55
Client Sample ID:	SS1	Date Received:	09/17/01 09:15
Client Name:	TETRA TECH EMI	Date Ext./Dig. :	09/18/01
Analytical Method:	EPA 8082	Date Analyzed:	09/20/01
Matrix:	Soil	Batch Number:	109626
Percent Moisture:	13.9	Pace Project No.:	6052609

Compound	MDL	PQL	Units	Dilution	Results	Qualifier
PCB-1016 (Aroclor 1016)	1040	3800	ug/kg	99.9		U
PCB-1221 (Aroclor 1221)	678	3800	ug/kg	99.9		U
PCB-1232 (Aroclor 1232)	621	3800	ug/kg	99.9		U
PCB-1242 (Aroclor 1242)	1070	3800	ug/kg	99.9		U
PCB-1248 (Aroclor 1248)	875	3800	ug/kg	99.9		U
PCB-1254 (Aroclor 1254)	611	3800	ug/kg	99.9	34000	
PCB-1260 (Aroclor 1260)	772	3800	ug/kg	99.9	23000	

U - The analyte was analyzed for, but not detected above MDL.

J - The analyte was positively identified below the PQL.

B - The analyte was found in an associated method blank, as well as in the sample.

Pace Sample No.:	604579029	Date Collected:	09/14/01 11:05
Client Sample ID:	SS2	Date Received:	09/17/01 09:15
Client Name:	TETRA TECH EMI	Date Ext./Dig. :	09/18/01
Analytical Method:	EPA 8082	Date Analyzed:	09/20/01
Matrix:	Soil	Batch Number:	109626
Percent Moisture:	21.1	Pace Project No.:	6052609

Compound	MDL	PQL	Units	Dilution	Results	Qualifier
PCB-1016 (Aroclor 1016)	1150	4200	ug/kg	99.9		U
PCB-1221 (Aroclor 1221)	750	4200	ug/kg	99.9		U
PCB-1232 (Aroclor 1232)	686	4200	ug/kg	99.9		U
PCB-1242 (Aroclor 1242)	1180	4200	ug/kg	99.9		U
PCB-1248 (Aroclor 1248)	967	4200	ug/kg	99.9		U
PCB-1254 (Aroclor 1254)	676	4200	ug/kg	99.9	39000	
PCB-1260 (Aroclor 1260)	853	4200	ug/kg	99.9	28000	

U - The analyte was analyzed for, but not detected above MDL.

J - The analyte was positively identified below the PQL.

B - The analyte was found in an associated method blank, as well as in the sample.

Pace Sample No.:	604579045	Date Collected:	09/14/01 11:35
Client Sample ID:	SS3	Date Received:	09/17/01 09:15
Client Name:	TETRA TECH EMI	Date Ext./Dig. :	09/18/01
Analytical Method:	EPA 8082	Date Analyzed:	09/20/01
Matrix:	Soil	Batch Number:	109626
Percent Moisture:	8.6	Pace Project No.:	6052609

Compound	MDL	PQL	Units	Dilution	Results	Qualifier
PCB-1016 (Aroclor 1016)	982	3600	ug/kg	99.9		U
PCB-1221 (Aroclor 1221)	643	3600	ug/kg	99.9		U
PCB-1232 (Aroclor 1232)	588	3600	ug/kg	99.9		U
PCB-1242 (Aroclor 1242)	1010	3600	ug/kg	99.9		U
PCB-1248 (Aroclor 1248)	829	3600	ug/kg	99.9		U
PCB-1254 (Aroclor 1254)	579	3600	ug/kg	99.9	7900	
PCB-1260 (Aroclor 1260)	731	3600	ug/kg	99.9		U

U - The analyte was analyzed for, but not detected above MDL.

J - The analyte was positively identified below the PQL.

B - The analyte was found in an associated method blank, as well as in the sample.

Pace Sample No.:	604579060	Date Collected:	09/14/01 11:55
Client Sample ID:	SS4	Date Received:	09/17/01 09:15
Client Name:	TETRA TECH EMI	Date Ext./Dig. :	09/18/01
Analytical Method:	EPA 8082	Date Analyzed:	09/20/01
Matrix:	Soil	Batch Number:	109626
Percent Moisture:	32.7	Pace Project No.:	6052609

Compound	MDL	PQL	Units	Dilution	Results	Qualifier
PCB-1016 (Aroclor 1016)	2670	9800	ug/kg	200		U
PCB-1221 (Aroclor 1221)	1750	9800	ug/kg	200		U
PCB-1232 (Aroclor 1232)	1600	9800	ug/kg	200		U
PCB-1242 (Aroclor 1242)	2750	9800	ug/kg	200		U
PCB-1248 (Aroclor 1248)	2260	9800	ug/kg	200		U
PCB-1254 (Aroclor 1254)	1580	9800	ug/kg	200	120000	
PCB-1260 (Aroclor 1260)	1990	9800	ug/kg	200	110000	

U - The analyte was analyzed for, but not detected above MDL.

J - The analyte was positively identified below the PQL.

B - The analyte was found in an associated method blank, as well as in the sample.

QC Batch: 109610
QC Queue: WET Wet Chemistry
QC Proc: 9045 pH, in Soil by EPA 9045

Kansas
Validation Report
for Batch 109610
Queue: WET Wet Chemistry

Sample ID: 604580365/DUP From QC Batch 109610 Sample Comment: N Client: Not Available for QC
Sample Type: Duplicate Original Sample Number: 604579003
Proc: 9045 pH, in Soil by EPA 9045 Inst DF: 1
Run: 09/18/01 Analyst: JLC Jeff Covault Hold: 09/15/01 17:00 Hold Exceed: YES

Compound Name	Adj. MDL	Posted Result	Posted Units	Report Limit	Corrected Result	Report Units	Over Limit	Dilution Factor	Spike Conc	% Rec	% Rec Limits	RPD	RPD Max	Req. Limit
pH		7.32			7.32			1				2		

1 compounds listed 1 reportable compounds listed 0 reportable surrogates listed

Sample ID: 6045/9003/SS1 Sample Comment: Y Client: TETRA TECH EMI
Sample Type: Paying Sample Project Number: 6052609
Comments: SDG 6052609 LEVEL D DATA PKG DUE 10-12
Proc: 9045 pH, in Soil by EPA 9045 Inst DF: 1
Run: 09/18/01 Analyst: JLC Jeff Covault Hold: 09/15/01 17:00 Hold Exceeded: YES

Compound Name	Adj. MDL	Posted Result	Posted Units	Report Limit	Corrected Result	Report Units	Over Limit	Dilution Factor	Spike Conc	% Rec	% Rec Limits	Req. Limit
pH		7.19			7.19			1				

1 compounds listed 1 reportable compounds listed 0 reportable surrogates listed

Sample ID: 6045/9029/SS2 Sample Comment: Y Client: TETRA TECH EMI
Sample Type: Paying Sample Project Number: 6052609
Comments: SDG 6052609 LEVEL D DATA PKG DUE 10-12
Proc: 9045 pH, in Soil by EPA 9045 Inst DF: 1
Run: 09/18/01 Analyst: JLC Jeff Covault Hold: 09/15/01 17:00 Hold Exceeded: YES

Compound Name	Adj. MDL	Posted Result	Posted Units	Report Limit	Corrected Result	Report Units	Over Limit	Dilution Factor	Spike Conc	% Rec	% Rec Limits	Req. Limit
pH		7.9			7.9			1				

1 compounds listed 1 reportable compounds listed 0 reportable surrogates listed

QC Batch: 109610
QC Queue: WET Wet Chemistry
QC Proc: 9045 pH, in Soil by EPA 9045

Kansas
Validation Report
for Batch 109610
Queue: WET Wet Chemistry

Sample ID: 6045/9045/SS3 Sample Comment: Y Client: TETRA TECH EMI
Sample Type: Paying Sample Project Number: 6052609
Comments: SDG 6052609 LEVEL D DATA PKG DUE 10-12
Proc: 9045 pH, in Soil by EPA 9045 Inst DF: 1
Run: 09/18/01 Analyst: JLC Jeff Covault Hold: 09/15/01 17:00 Hold Exceeded YES

Compound Name	Adj. MDL	Posted Result	Posted Units	Report Limit	Corrected Result	Report Units	Over Limit	Dilution Factor	Spike Conc	% Rec	% Rec Limits	Reg. Limit
pH		7.98			7.98			1				

1 compounds listed 1 reportable compounds listed 0 reportable surrogates listed

Sample ID: 6045/9060/SS4 Sample Comment: Y Client: TETRA TECH EMI
Sample Type: Paying Sample Project Number: 6052609
Comments: SDG 6052609 LEVEL D DATA PKG DUE 10-12
Proc: 9045 pH, in Soil by EPA 9045 Inst DF: 1
Run: 09/18/01 Analyst: JLC Jeff Covault Hold: 09/15/01 17:00 Hold Exceeded YES

Compound Name	Adj. MDL	Posted Result	Posted Units	Report Limit	Corrected Result	Report Units	Over Limit	Dilution Factor	Spike Conc	% Rec	% Rec Limits	Reg. Limit
pH		7.02			7.02			1				

1 compounds listed 1 reportable compounds listed 0 reportable surrogates listed

*** END OF REPORT ***

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579003 **Client ID:** SS1

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.06 **Volume:** 100 **Percent Moisture:** 13.938349

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	193.7	0.44	9.3	479	R	1	ICP	9/28/2001	10:48
Barium	233.53	0.19	0.44	6190	B	1	ICP	9/28/2001	10:48
Cadmium	226.50	0.027	0.55	12.6		1	ICP	9/28/2001	10:48
Chromium	267.72	0.033	0.77	535	B	1	ICP	9/28/2001	10:48
Selenium	196.03	0.51	11.0	UJ 0.51	UB	1	ICP	9/28/2001	10:48
Silver	328.07	0.20	0.77	J 14.6	B	1	ICP	9/28/2001	10:48

HUE
4 Dec 01

Comments:

Version 4.10.3

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579029 **Client ID:** SS2

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.08 **Volume:** 100 **Percent Moisture:** 21.087508

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	193.7	0.47	10.0	12.4	~~R~~	1	ICP	9/28/2001	11:06
Barium	233.53	0.21	0.47	4910	~~R~~	1	ICP	9/28/2001	11:06
Cadmium	226.50	0.029	0.59	17.0		1	ICP	9/28/2001	11:06
Chromium	267.72	0.035	0.82	1390	~~R~~	1	ICP	9/28/2001	11:06
Selenium	196.03	0.54	11.7	J 4.8	~~BR~~	1	ICP	9/28/2001	11:06
Silver	328.07	0.21	0.82	J 2.9	~~R~~	1	ICP	9/28/2001	11:06

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4 Dec 01

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579045 **Client ID:** SS3

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.08 **Volume:** 100 **Percent Moisture:** 8.561164

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	193.7	0.41	8.6	894		1	ICP	9/28/2001	11:22
Barium	233.53	0.18	0.41	3230		1	ICP	9/28/2001	11:22
Cadmium	226.50	0.025	0.51	22.7		1	ICP	9/28/2001	11:22
Chromium	267.72	0.030	0.71	339		1	ICP	9/28/2001	11:22
Selenium	196.03	0.47	10.1	J 0.47	U	1	ICP	9/28/2001	11:22
Silver	328.07	0.18	0.71	J 30.3		1	ICP	9/28/2001	11:22

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4 Dec 01

Comments:

U Result is less than the MDL

B Result is between MDL and PRL

Form I Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579060 **Client ID:** SS4

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.01 **Volume:** 100 **Percent Moisture:** 32.745726

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	193.7	0.59	12.5	~~J~~ 1.7	BR	1	ICP	9/28/2001	11:28
Barium	233.53	0.26	0.59	6220	R	1	ICP	9/28/2001	11:28
Cadmium	226.50	0.037	0.74	5.9		1	ICP	9/28/2001	11:28
Chromium	267.72	0.044	1.0	1530	R	1	ICP	9/28/2001	11:28
Selenium	196.03	0.68	14.7	UJ 2.0	BR	1	ICP	9/28/2001	11:28
Silver	328.07	0.27	1.0	J 1.4	R	1	ICP	9/28/2001	11:28

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4 Dec 01

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579003 **Client ID:** SS1

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.06 **Volume:** 100 **Percent Moisture:** 13.938349

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	2.5	54.8	103000	R	10	ICP	9/29/2001	2:21

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4 Dec 01

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579029 **Client ID:** SS2

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.08 **Volume:** 100 **Percent Moisture:** 21.087508

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	2.7	58.7	34400	R	10	ICP	9/29/2001	3:34

HUE

4 Dec 01

Comments:

Version 4.10.3

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579045 **Client ID:** SS3

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.08 **Volume:** 100 **Percent Moisture:** 8.561164

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	2.3	50.6	80600	B	10	ICP	9/29/2001	2:55

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Comments:

Version 4.10.3

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579060 **Client ID:** SS4

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/20/2001 **Prep Batch:** 109733

Weight: 1.01 **Volume:** 100 **Percent Moisture:** 32.745726

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	3.4	73.6	20100	R	10	ICP	9/29/2001	3:10

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4 Dec 01

Comments:

Version 4.10.2

U Result is less than the MDL
B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579003 **Client ID:** SS1

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/24/2001 **Prep Batch:** 109735

Weight: 0.6 **Volume:** 100 **Percent Moisture:** 13.938349

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.14	2.0	2.2		10	CVAA	9/24/2001	14:36

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579029 **Client ID:** SS2

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/24/2001 **Prep Batch:** 109735

Weight: 0.6 **Volume:** 100 **Percent Moisture:** 21.087508

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.015	0.22	1.1		1	CVAA	9/24/2001	14:38

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579045 **Client ID:** SS3

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/24/2001 **Prep Batch:** 109735

Weight: 0.6 **Volume:** 100 **Percent Moisture:** 8.561164

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.13	1.9	2.9		10	CVAA	9/24/2001	14:40

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579060 **Client ID:** SS4

Matrix: Soil **Units:** mg/kg **Prep Date:** 9/24/2001 **Prep Batch:** 109735

Weight: 0.6 **Volume:** 100 **Percent Moisture:** 32.745726

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.017	0.25	1.9		1	CVAA	9/24/2001	14:42

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579011 **Client ID:** SS1 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	**193.7**	**3.0**	**85.0**	**J 33.5**	**B**	**1**	**ICP**	**9/28/2001**	**14:47**
Barium	**233.53**	**1.0**	**4.0**	**732**		**1**	**ICP**	**9/28/2001**	**14:47**
Cadmium	**226.50**	**0.50**	**5.0**	**58.3**		**1**	**ICP**	**9/28/2001**	**14:47**
Chromium	267.72	1.1	7.0	1.1	U	1	ICP	9/28/2001	14:47
Selenium	196.03	8.9	100	8.9	U	1	ICP	9/28/2001	14:47
Silver	**328.07**	**1.6**	**7.0**	**23.9**		**1**	**ICP**	**9/28/2001**	**14:47**

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Comments:

Version 4.10.3

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579037 **Client ID:** SS2 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	193.7	3.0	85.0	3.0	U	1	ICP	9/28/2001	15:18
Barium	233.53	1.0	4.0	2220		1	ICP	9/28/2001	15:18
Cadmium	226.50	0.50	5.0	73.7		1	ICP	9/28/2001	15:18
Chromium	267.72	1.1	7.0	U 3.8	B	1	ICP	9/28/2001	15:18
Selenium	196.03	8.9	100	U 23.9	B	1	ICP	9/28/2001	15:18
Silver	328.07	1.6	7.0	J 3.9	B	1	ICP	9/28/2001	15:18

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Comments:

Version 4.10.3

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579052 **Client ID:** SS3 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	**193.7**	**3.0**	**85.0**	U 6.9	~~B~~	**1**	**ICP**	**9/28/2001**	**15:25**
Barium	**233.53**	**1.0**	**4.0**	**442**		**1**	**ICP**	**9/28/2001**	**15:25**
Cadmium	**226.50**	**0.50**	**5.0**	**169**		**1**	**ICP**	**9/28/2001**	**15:25**
Chromium	267.72	1.1	7.0	1.1	U	1	ICP	9/28/2001	15:25
Selenium	196.03	8.9	100	8.9	U	1	ICP	9/28/2001	15:25
Silver	**328.07**	**1.6**	**7.0**	**27.4**		**1**	**ICP**	**9/28/2001**	**15:25**

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Comments:

Version 4.10.3

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579078 **Client ID:** SS4 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	193.7	3.0	85.0	3.0	U	1	ICP	9/28/2001	15:32
Barium	**233.53**	**1.0**	**4.0**	**3440**		**1**	**ICP**	**9/28/2001**	**15:32**
Cadmium	**226.50**	**0.50**	**5.0**	**23.4**		**1**	**ICP**	**9/28/2001**	**15:32**
Chromium	**267.72**	**1.1**	**7.0**	U 6.7	B	**1**	**ICP**	**9/28/2001**	**15:32**
Selenium	**196.03**	**8.9**	**100**	U 10.6	B	**1**	**ICP**	**9/28/2001**	**15:32**
Silver	328.07	1.6	7.0	1.6	U	1	ICP	9/28/2001	15:32

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4 Dec 01

Comments:

Version 4.10.3

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579011 **Client ID:** SS1 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	22.2	500	856000	R	10	ICP	9/28/2001	17:34

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Comments:

Version 4.10.3

U Result is less than the MDL
B Result is between MDL and PRL

Form I Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579037 **Client ID:** SS2 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	22.2	500	51800	J	10	ICP	9/28/2001	17:48

HUE
4 Dec 01

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579052 **Client ID:** SS3 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	22.2	500	906000	R	10	ICP	9/28/2001	17:55

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Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579078 **Client ID:** SS4 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/21/2001 **Prep Batch:** 109802

Weight: 50 **Volume:** 50 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	22.2	500	15700	J	10	ICP	9/28/2001	18:01

HSE
4 Dec 01

Comments:

Version 4.10.3

U Result is less than the MDL
B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579011 **Client ID:** SS1 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/26/2001 **Prep Batch:** 109972

Weight: 10 **Volume:** 30 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.063	2.0	U 0.085	B	1	CVAA	9/26/2001	13:26

HUG
4 Dec 01

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579037 **Client ID:** SS2 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/26/2001 **Prep Batch:** 109972

Weight: 10 **Volume:** 30 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.063	2.0	0.063	U	1	CVAA	9/26/2001	13:28

Comments:

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579052 **Client ID:** SS3 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/26/2001 **Prep Batch:** 109972

Weight: 10 **Volume:** 30 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.063	2.0	0.063	U	1	CVAA	9/26/2001	13:30

Comments:

U Result is less than the MDL

B Result is between MDL and PRL

Form 1 Equivalent

Pace Analytical Services

Metals Data Reporting Form

Sample Results

Lab Sample ID: 604579078 **Client ID:** SS4 TCLP

Matrix: Water **Units:** ug/L **Prep Date:** 9/26/2001 **Prep Batch:** 109972

Weight: 10 **Volume:** 30 **Percent Moisture:**

Element	WL/ Mass	MDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Mercury	253.7	0.063	2.0	0.063	U	1	CVAA	9/26/2001	13:32

Comments: